B.D.U.C.

BETA DISK USERS CLUB

BETA DISK NEWSLETTER NO. 6

Welcome to this the last issue of the BDUC newsletter. I am sorry it has come to this,but activity and support for the Beta are almost non-existent here in the UK. It is possible that some company may take up the Beta again but I think that is most unlikely since the Plus 3 seems to be quite popular despite it's 3" drive. Most shops sell the Disciple or Swift Disc system.

I hope v3.00 and v4.00 users found the Individual Software literature of interest. This issue features an article about a comprehensive track zero utility program. It's another excellent program by Hendrick Broothaers. Unfortunately, the program is too large to publish in these pages since the program has a Basic listing and two large code blocks. The program may be obtained from BDUC by sending a disk stating format required and sufficient postage for return. The article makes for a good read so here it is.

TRACK ZERO UTILITY - BY HENDRICK BROOTHAERS, BELGIUM.
V3.0,V4.03,V4.1,V4.11 TRDOS

Z R U T I L   D O C U M E N T A T I O N

Updates:
15-03-86
- For a bug in option 7 in the second menu. It did not update the number of free sectors left, when a file was recovered at the end of the disk.
- For a bug when DOS version 3.0 is installed. Option (5) read/write is from/to the wrong track, because version 3.0 uses other values for type of format in the DOS variables.
- Changed the file type of the TRACK 0 file to CODE, so that DOS versions which do not have the file handling options can run zrutil.
22-03-86
- For new option (9), in the second menu to disable the automatic setting of disk format type in case track zero is unreadable. Select manual format type setting instead.
08-04-86
- Adjust format type for DOS 4.X versions. When 40 track **drives** are used a special format code has to be set in the DOS **"format** variable.

13-04-86
- Add option (6) CAT to printer. This comes to BASIC at line 9615 which is a call to initialize the printer code (KEMPSTON "S"). Line 9620 is the actual CAT to printer. The other lines with the POKES direct the output to the printer.
19-04-86
- Update of this text file. Last three paragraphs added.

Why is there a "zrutil" program.

I am convinced that every one of you has known those bad times when after a lot of programming work, and storing your efforts on a disk, you find out at some later time that your disk for some unknown reason is not readable anymore. If it comforts you, it happens to all of us. The purpose of this article is not to go into the reasons why these things happen, but how we can minimize the damage and recover from such a disaster.

Wouldn't it be nice when track zero became scrambled that we had another disk with a backup of the one that screwed up. Unfortunately, usually we do not have that backup disk and it always seems to be that the backup does'nt have the latest files on it.

To overcome these problems I came up with the idea of keeping a copy of track zero elsewhere on the disk. First I thought about the last track on the disk, but this is not a good thing to do for different reasons.
-First of all is it the weakest track because it has the highest data density.
-Then there is the danger of overwriting the last track when the disk becomes nearly full.
-Also the last track is a different track number depending on the disk format, this would make the program more complicated and I wanted to make a relatively easy to use program.

I decided that a good place to do it is track one, it has none of the drawbacks mentioned above, and you can still do whatever you want with your disk, except use track one. If you want to use this idea, I have written a program called "zrutil" which really stands for track zero utility program. It will do the job for you. To begin with it will take time and effort to adapt your existing disks, but believe me, you will be pleased you made the effort, the day your next crash happens.

What can "zrutil" do for you.

First, I must tell you that the program is compatible with the following DOS versions: 3.0 - 4.03 - 4.04 - 4.1 - 4.10 - 4.11

)

(and maybe others!).It checks which version is installed and adapts itself automatically to that version. If your DOS version is not compatible, zrutil can be adapted with some POKES. See beginning of BASIC section.

This section is not intended as a full guide but serves as a condensed set of user instructions. Option 7 of the main menu brings you in the "track zero safety features". Here you can use option (4) to reserve track one for a copy of track zero. The disk must be empty for this option, otherwise the option is not executed since it only works on an empty disk.
Option (1) can be used to clean up your disk but BE CAREFUL. THIS OPERATION WIPES OUT THE CONTENTS OF A DISK. The easy way is to use option (6) which does it all in one go. It wipes out the disk, and reserves track one. Once you have done this your disk is ready to receive new files.

When you have changed something on the disk,(added or deleted files, move, etc.) you can use option (2) which makes an updated copy of track zero to track one.Option (2) has to be done WHENEVER YOU CHANGE SOMETHING ON THE DISK, in order to keep an EXACT copy on track one.This means a little effort every time, but it's worth it since track one must be maintained to enable recovery of files.

Now comes the good part;
For some reason your track zero contains rubbish. All you have to do is do option (3) which copies track one back to track zero, and your disk is good again.

Yes,but what if disk errors occur in track zero?
No problem at all, do option (1) to reformat track zero ONLY and do option (3) to copy one to zero, and there you go again with a usable disk. It should be obvious that track zero has to be formatted in the same format as the disk was formatted before.

If the disk cannot be formatted and track zero remains unreadable, it is I M P O R T A N T that you use option (9) to manualy set the disk format type. This disables at the same time an automatic check by the program for the disk format. Whenever you use one of the options to access track zero the automatic checking for format type will become active again.
Even when the worst happens and track zero is totally unusable (due to physical damage for example) you can still save your valuable files by using option (5) of the main menu. You probably have to do option (9) to disable the reading of track zero (to get the format type) and to manually set the format type of your disk.

You can now read track one and decode the file information which
you can then use with option (5) to read the file into memory
and then write it back to another disk via option (5) again or
via option (8) and the DOS SAVE command.
For BASIC programs you will have to find the program length and
set the system variables accordingly. You could also copy track
one to track zero of another disk and copy all other tracks to
that disk.

                    There are a few other goodies in "zrutil".
Back to the main menu now. Option (3) allows you to change the
name of a file. This might not look very useful at first, but it
allows you to recover deleted files and to fix any names that
have funny characters in them and could mess up the disk.
(like a zero in the first position of the name). If the file you
changed was a deleted file, the deleted file count will be
updated automatically. When you use option (3) you only change
the memory buffer, to update the disk you must use option (4).
When you do a CAT, any deleted files at the end are not shown in
the CATALOGUE printout. Use option (8) of the second menu to
look at any deleted files at the end.
Note that only files who can succesfully be recovered are shown.
To recover these files you have to use option (7). This option
shows one file at the time. It will make the first deleted file
visible so that it can now be recovered like any other deleted
file. The files can only be recovered in the order they are
shown. If you want to recover the third one only, you have to
recover 1,2 and 3 and delete 1 and 2 later. This is because the
free sector count must be handled correctly.
Do not forget to update the disk with option (4) of the main
menu.
Option (5) allows you to read or write anywhere on the disk.
Even if your track zero and one are bad, this can be used to
recover some files. It is less easy of course but it is useful.
Remember that if track zero is unreadable to use option (9) to
manually set the format type.
Option (9) provides a handshake with your own basic by bringing
you to basic LINE 100. You can put your basic at line 100 and do
whatever you want to do. To go back to the zrutil main menu just
do a GOTO 9225.
In case you want to use this, it might be helpful to know that
the track zero data from option 2 is stored in memory starting
at location 47500 for a length of 9 sectors. The useful sector 8
(count starts at zero) information starts at address 49773
Please note that all the "recover file" options use the
catalogue info in memory as input and output. This means that
you have to do option (2) of the main menu first to get the
catalogue info into memory, and after you have done any changes
to the catalogue in memory, you have to do option (4) of the
main menu to save your changes on track zero.

```
DISK RENAME - BY M.J.SMITH,BDUC.
V5.XX TRDOS
```

This short program enables the title of a disk to be changed without re-formatting of the disk, and avoids unnecessary copying to other disks just to change the disk title. The program copies track 0 sector 8 to the buffer, the new name is entered and the new name is written to the buffer area and then the whole sector is written back to the disk. Routine 6 called from line 200 is the write a sector(s) routine in this case only 1 sector is written back to the disk. The machine code is very similar to the undelete code in the last issue.

```
 10 CLEAR 29999
 20 DIM B$(9)
 30 CLS
 40 PRINT AT 8,0;"DISK RENAME"
 50 INPUT "NEWNAME:"; LINE B$
 60 RESTORE
 70 FOR A=30000 TO 30020
 80 READ D
 90 POKE A,D
100 NEXT A
110 DATA 0,0,0,33,0,0,22,0,30,0,6,1,0,0,0,14,5,205,19,61,201
120 LET B=31000
130 LET T=0
140 LET S=8
150 LET L=1
160 LET HI=INT (B/256)
170 LET LO=B-HI*256
180 POKE 30004,LO
190 POKE 30005,HI
200 POKE 30007,T
210 POKE 30009,S
220 POKE 30011,L
230 RANDOMIZE USR 30000
240 LET A$=""
250 FOR I=B+245 TO B+252
260 LET A$=A$+CHR$ (PEEK I)
270 NEXT I
280 PRINT '"      DISK:";A$
290 PRINT "RENAMED AS:";B$
300 PRINT
310 FOR T=1 TO 8
320 POKE (B+244+T),CODE B$(T)
330 PRINT (B+244+T);" ";B$(T);" ";CODE B$(T)
340 NEXT T
350 POKE 30016,6
360 RANDOMIZE USR 30000
```

```
DISK VERIFY - BY M.J.SMITH. BDUC
V5.XX TRDOS
```

This small program may be used to verify each track of a disk
and each side in turn. It may be used when a disk is perhaps
suspect or damaged. This program will not recover lost data but
will confirm if checksums are intact. The program could even be
modified just to check track Ø. This program uses routines 21,22
and 23, previously undocumented. The 'standard' format is
employed with machine code poked into locations 30000 to 30026
data buffer at 32000.

```
 10    CLEAR 29999
 20    RESTORE
 30    FOR A=30000 TO 30026
 40    READ D
 50    POKE A,D
 60    NEXT A
 70    DATA 0,0,0,33,0,0,22,0,30,0,6,1,0,0,0,14,21,205,19,61,201,1
       4,0,205,19,61,201
 80    LET B=32000
 90    LET Z=0
100    LET C=0
110    LET HI=INT (B/256)
120    LET LO=B-HI*256
130    POKE 30004,LO
140    POKE 30005,HI
150    POKE 30022,22
160    LET E=USR 30021
170    LET TT=80
180    FOR T=0 TO TT-1
190    PRINT AT 4,0;"SIDE:";Z;" T:";T+1,"E:";C
200    POKE 30007,T
210    LET E=USR 30000
220    IF E<>0 THEN LET C=C+1
230    NEXT T
240    IF Z=0 THEN LET Z=1: POKE 30022,23: GO TO 160
250    PRINT C;" ERRORS"
```

TRDOS ROUTINES - BY M.J.SMITH. BDUC
V5.XX TRDOS
This article describes four extra DOS routines present in the
v5.xx version. These are not documented anywhere, they are
listed below in a similar format to the twenty routines
featured in issue number 4.

ROUTINE 21 (# 15)

Verify currently selected track, range 0 to 79.
Before entry set B=1 (number of tracks),A=track,D=track,E=sector
CALL 3D13, on return BC register pair has error code else 0
which signifies OK.
(See the verify program in this issue)

ROUTINE 22 (# 16)

Selects side 0 for double sided systems. Default side for single
sided drives. Set C=16 then CALL 3D13

ROUTINE 23 (# 17)

Selects side 1 for double sided systems.
Set C=17 then CALL 3D13

ROUTINE 24 (# 18)

This routine checks the directory of the drive currently
specified and returns the current drive status, codes returned
are displayed as error message 0 to 12. Alternatively, the BC
register pair contains the value of the error code.

                         BETA BASIC 3.0
I currently have a disk data handling utility which runs under
Beta Basic 3.0. If anyone is interested please send a disk
stating your disk format and enclose return postage.

            F U T U R E   C O N T R I B U T I O N S
If anyone has any material for any future publications they may
still send it to BDUC. I hope to complete a "Beta Disk Users
Guide" by Summer 1988.This will have material from these
newsletters and other material that was not included for various
reasons.
It was dissapointing to find that only 7% of members wished to
re-subscribe to the newsletter in 1988! I'm afraid with this
level of support I had no alternative but to wind up BDUC.
Thank you for your support during 1987 and best wishes for 1988.

1793 FLOPPY DISK CONTROLLER

```
          ------------------
-------7-|DAL0       TG43|-29------
-------8-|DAL1       DDEN|-37------
-------9-|DAL2      R CLK|-26------
------10-|DAL3         WG|-30------
------11-|DAL4         WD|-31------
------12-|DAL5      EARLY|-17------
------13-|DAL6       LATE|-18------
------14-|DAL7   VFOE/WF |-33------
                 RAWREAD |-27------


-------1-|VBB         HLD|-28------

-------5-|A0   1793

-------6-|A1         HLT|-23------

------40-|VDD

                     SSO|-25------
------21-|VCC

------22-|TEST      STEP|-15------

-------3-|CS       DIR C|-16------

------20-|VSS
                   READY|-32------
-------4-|RE        TR00|-34------

-------2-|WE
                      IP|-35------

                    WPRT|-36------

-----38-|DRQ
-----39-|INTRQ
-----19-|MR
-----24-|CLK 1MHZ
          ------------------
```

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